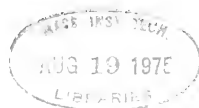
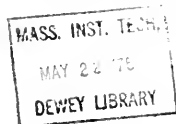




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The Career of Richard C. McClaurin

II - The Later Years

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when Richard Maclaurin arrived in Boston in the summer of 1909 for his inauguration as president of MIT the Institute was in a state of crisis.¹ MIT was poor, small and struggling - perhaps even its very survival was at stake. The malaise had deep roots. William Barton Rogers had founded the Institute in 1861, and became its first president. A geologist of high repute, he had been president of the National Academy of Sciences, and a friend of Charles Darwin, Lord Kelvin and H.L.F. von Helmholtz. Rogers had been 'a great crusader preaching a higher education framed to meet the urgent needs of his time'. He had broken away from traditional university education, and established MIT in order that 'education might be obtained in science but without overlooking letters'. He incorporated in the Institute's Charter a statement that it was founded for the purpose of instituting and maintaining a school of industrial science, and 'aiding generally by suitable means the advancement, development and practical application of science in connection with arts, manufactures and commerce'.

The way forward for an organization pioneering a radically new approach to higher education was arduous. After a stout struggle in the early years under Rogers, another great president, Francis A. Walker, had in the later 19th century transformed the Institute 'from an experiment into a brilliant success' in terms of teaching programmes and reputation. By 1909 MIT had achieved notable standing in the United States and the world for its prowess in engineering, the keenness and competence of its graduates, its able and enthusiastic faculty, and a dedication to hard work. But like the archetypical small, growing business the Institute had been plagued from the start by a chronic shortage of capital. The continuing problem expressed itself in a variety of guises. It lay behind the perennial issue concerning whether the Institute should ally itself, one way or another, with the large and prestigious Harvard University down the road. Combination with Harvard had first been raised when MIT came into being, and had come up as an issue during the administration of each successive president.

In 1904 there had been a move inside the Institute to make it Harvard's engineering school, in this way to solve the capital problem by obtaining access to the university's healthier funding. The proposition,

1. For an account of Maclaurin's earlier career see Roy McLennan, 'The Career of Richard C. Maclaurin: 1 - The Early Years', unpublished manuscript, Sloan School of Management, MIT, February, 1975.

presented by the then president Pritchett almost as a fait accompli, looked to most alumni and faculty like the first step on a primrose path that would lead to MIT's demise. A protracted and sometimes bitter struggle took place inside the Institute over Pritchett's proposal. In 1905 two expressions of opinion on the merger proposition were taken. Seventy per cent of the almost 3,000 alumni who responded to a poll were against merger, as were 89 per cent of senior faculty.¹ Finally a legal decision affecting MIT's position knocked the scheme on the head. Three months later Pritchett resigned. Prescott remarks in his history of the Institute that the conflict engendered

pronounced and lasting feelings of distrust in the motives of those who were most active in attempting to bring about the alliance.²

Misinterpretation of motives and distorted perceptions were rife.

After the merger battle rich men in Boston and elsewhere would not donate funds simply to maintain MIT's existence as an independent institution. Indeed, even more unkindly, many Bostonians were 'oblivious of the Institute's very existence, or thought of it as a trade school, supported by the state'.³ There was a good deal of truth in the latter belief. In the legal and financial senses the Institute had been founded by the State of Massachusetts, had always been in large measure dependent on state funding, and bore its name. The state had given the land on which the first buildings had been erected. 1909 was the fifteenth year the state provided an annual grant to support activities. In that year MIT's income consisted of \$25,000 from the state, and a further \$40,000 subscribed by alumni. With expenses running at about \$95,000, MIT was exceeding its income by about \$30,000 for the year.⁴ Worse still, the state and alumni funding arrangements would come to an end the following year.

1. These calculations are based on figures given in Samuel C. Prescott, When MIT was Boston Tech, MIT Press, 1954, pp. 200-201.

2. Prescott, *ibid.* p. 203.

3. Henry G. Pearson, Richard Cockburn Maclaurin, Macmillan, 1937, p.101.

4. Pearson, *ibid.* p. 100-101.

The Institute's financial malaise was physically reflected in buildings, facilities and academic salaries. MIT was housed in a widely scattered, motley collection of buildings in Copley Square in inner Boston, around the original building in Boylston Street. Some of the structures had been erected for what had at the time been believed to be temporary use. Some had fallen into disrepair, and were on the verge of being condemned as unsafe. The buildings were under-equipped and overcrowded. Student facilities were pathetic. Beyond the architectural manifestations of malaise lay the Institute's inability to provide adequate laboratories, and decent salaries for faculty members. In brief MIT faced in 1909 a systemic set of physical, educational, financial, administrative and social problems, and was in only a meager sense successful in pursuing the mission defined for it by Rogers. The importance of adequate funds to secure a physically, psychologically and symbolically adequate site, buildings and equipment had been discussed for years. But there seemed little hope of such an uplift occurring. After all the Institute was running serious budget deficits, never mind expensive development plans.

In the context of a wider perspective MIT was not growing or diversifying fast enough to meet its mission of service to society. American industry, economy and society were, in the first decade of the 20th century, rapidly changing. The Institute's teaching programmes and research activities needed revision on the basis of projections of the imperatives of present and probable future developments. There was a need for institutional leadership to re-interpret Roger's mission for MIT in the light of current and future environmental conditions. As a sub-part of the problem was the unresolved, continuing question of the appropriate relationship between the Institute, avator of the applied scientific role, and the prestigious, comprehensive Harvard University. What attitude should one take in a small, struggling organization towards a neighbouring, large and strong organization in presumably similar fields of activity? It is hardly any wonder that the two men officially known to have been offered the presidency since Fritchett resigned had turned it down. Many others would not touch it either.

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Maclaurin was to be inaugurated as president at ceremonies to be held in conjunction with a major alumni reunion. Alice, his wife, did not come with him to Boston: accompanied by their son she had sailed for England the month before.¹ On the day of his inauguration, June 9, 1909, Maclaurin was barely 39 years old. At Symphony Hall, where the ceremony was held, the audience noticed his youth and appearance:

A slight man of medium height, very straight and quick in his movements, dark hair rather silvered, and keen, friendly eyes of quiet grey blue.²

He did not look particularly like an academic, but 'might [rather] have been any cultivated, brilliant business man'. Maclaurin began his inaugural speech by acknowledging the expectations of the audience:

On an occasion such as this I might perhaps be expected to say something as to the policy of the Institute and the plans for its future development.... I refrain from doing this, however, if for no other reason than that I recognize that promise and performance are often somewhat different things, and I do not wish to invite any inconvenient comparisons in the future.³

After this acknowledgement of political prudence, and the unnecessary risk in showing his hand before he needed to, Maclaurin continued:

All that seems necessary to do is to assure you that I shall do my best, and that... I heartily approve of the broad lines of the policy that has been established by my very distinguished predecessors.⁴

In lieu of a policy statement and an action plan he proposed to outline his values about university education. Since he was 'somewhat a stranger to you', he felt it appropriate.

His first value was that 'the end of education is to fit men to deal with the affairs of life'. This value should be operationalized, not deliberately ignored as it often was. 'It should be applied thoughtfully and rigorously as a test of every element' in the educational scheme. And it should not be narrowly construed. The educated man 'owes other duties to society that are in no sense inferior' to his professional duties and functions. In his domestic, city and state lives the educated man 'must

1. See McLennan, op.cit, p.33.

2. This description was written by a journalist some years later. See K. Bartlett, The Cambridge Evening Standard, March 4, 1916.

3. This quotation is taken from the text of his speech, given in 'The Inauguration of Dr Maclaurin', Technology Review, Vol.11, 1909, p.328.

4. Maclaurin, *ibid*, p.328.

constantly move and act': he has obligations to various publics. ¹

Maclaurin's second value was that science should play a very important part in higher education. He defined 'culture' as 'breadth and openness of mind and sanity of judgment'. Science and culture in this sense should go 'hand in hand': men may become cultured, he asserted, through a broadly conceived scientific education. Science must be 'taught in such a way as to make for that broad and liberal outlook on the world'. The actual discipline studied was not, he believed, the most important element in achieving a broad and liberal outlook. Rather 'it is the how rather than the what of study'. What mattered in higher education was the process of learning, rather than the substance.²

He advanced the claims of 'practical' education in more than one sense:

I see no reason... why a man should spend his time in so-called 'useless' studies for the sake of mental discipline and culture if he can gain these excellent things in studies that are more 'useful' in his calling.³

'Practical' study could be valuable to even impractical men:

Association with 'practical' studies is one of the best things even for the so-called unpractical man, who intends to deal mainly with the most abstract researches. Galileo made telescopes, Newton learned practical mechanics, Leibnitz invented machines, Kelvin laid cables. ⁴

He showed a realistic grasp of the role of higher education in careers:

Success in practical life is clearly not dependent wholly or even mainly on knowledge ... It is common experience here, as in the older world, that the men who make the greatest mark are often those that were quite unhonoured in the schools. At Oxford or at Cambridge they pursued 'a little learning and probably much more boating'. ⁵

Finally he praised MIT's work-centred and classless attitudes. At the Institute, he declared,

There is a tradition of seriousness of purpose and hard work, and there is little or no tendency to set up a wall of caste which is

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1. Maclaurin, *ibid*, pp.328-329.
 2. Maclaurin, *ibid*, pp.329-331.
 3. Maclaurin, *ibid*, p.331.
 4. Maclaurin, *ibid*, p.332.
 5. Maclaurin, *ibid*, p.333.

not an inconspicuous feature in the college life of the older world and ... is a menace to true citizenship and true democracy.¹ These last remarks and the inaugural as a whole show how comprehensively Maclaurin had rejected the assumptions and practices of Cambridge University, if indeed he had ever accepted them. Higher education was not about knowledge for its own sake, but to 'fit men to deal with the affairs of life'. Science, rather than the older learning, should play the leading role in order that the problems of industrial, social and international affairs be better understood and met.

At the subsequent alumni banquet he announced the policy of his administration on the two central issues which had hung fire for years: the location of MIT, and relations with Harvard. He stressed,

I for one am perfectly definite that the thing to do first is to secure a new site, and on that new site raise a new [Massachusetts Institute of] Technology with all the characteristics of the old.²

To secure this objective a million dollars would probably be needed. If the cost seemed high people should consider the alternative of doing nothing--the decline of MIT - which was totally unacceptable. On the second issue he was similarly definite:

There will be no more talk of merger with Harvard, but...we should ... reciprocate most heartily the genuine expression of good will that President Lowell [of Harvard University] has so recently made I believe that in the domain of applied science there is much we can do for our mutual help, but, to make cooperation real and practical, we must be strong enough for independence.³

Maclaurin was offering a strong lead implying growth and financial independence.

* * * * *

In the autumn of 1909 Maclaurin and his family returned to Boston from Europe, and Maclaurin took up the role of president in earnest. People involved in the Institute's mission soon found him to be a most sympathetic listener, with a capacity for absorbing their views. He 'knew, as few men do, when to listen and when to act'. He had 'a quiet, steady gaze'. With penetrating glance he seemed 'to fix and hold a visitor'.

1. Maclaurin, *ibid*, p.334.

2. This quotation is taken from the text of his speech, given the 'The Reunion Banquet', Technology Review, Vol. 11, 1909, p.362.

3. Maclaurin, *ibid*, p.364.

Institute people found him reserved and reticent - even aloof - with his own views and attitudes. Nichols, his oldest American friend, observed that

I do not believe it ever occurred to him that his own personal affairs could possibly be of interest to anybody else. His reserve was absolutely natural, not worn as a defense. 1.

People found him friendly and cooperative. Maclaurin spent a long time 'listening, observing, pondering, and took no step upon impulse'. His sense of proportion, his objectivity about problems under discussion was illustrated by a keen sense of situational humour. Years later William T. Sedgewick, a professorial colleague, wrote that

My first thought of Dr Maclaurin is of his humour, for no matter how grave the issue, Dr Maclaurin seemed always able to view the situation objectively and to look upon our complex human scene with amusement and tolerance.²

Maclaurin was to prove again and again that he possessed the superior executive's paradoxical capability of being able to analyze a problem objectively, and yet to act in a totally committed way.

Maclaurin fairly quickly moulded the administrative and liaison arrangements for the presidency into a shape which he found personally comfortable. He took the existing organizational arrangements and fitted them, without much change of structure, to his own assumptions and leadership style. As chief executive he had to work with the MIT Corporation, the Institute's governing body, the administration and faculty, and the well organized alumni association. The corporation had a membership of about fifty, which was unwieldy for problem-solving and decision-making purposes. For practical day-to-day purposes president Pritchett had instituted an executive committee of the corporation, consisting of seven members, chaired by him. It became Maclaurin's practice to hold frequent conferences with this committee, which he treated as an inner council of the corporation. In these conferences he never used Robert's Rules or other semi-legalistic parliamentary methods emphasizing the control of the chairman. Francis R. Hart, a member,

1. Ernest F. Nichols, 'Dr Maclaurin as a Colleague', Technology Review, vol. 22, 1920, p.367.

2. William T. Sedgewick, 'Gentleman and Scholar', Technology Review, Vol. 22, 1920, p.29.

remarked that the president's

manner of presenting matters requiring decision and action by the committee encouraged discussion and suggestion, and rarely led to heated argument.¹

Maclaurin did not expect concurrence with any preselected, preferred line of action, but preferred to develop one as the discussion progressed. He rarely expressed his preferences, and then only tentatively, but instead waited for an analysis of the issue to emerge from the discussion. Hart notes, 'He was quick to grasp the significance of some new point of view which... discussion developed.'² Maclaurin, Hart found, was 'wholly lacking in argumentative obstinacy'. Members of the committee 'shared with him responsibility for the decisions reached'.³ The skill with which he presented problems to the committee was intuitive, and a function of his assumptions about working with others. Hart commented about how the committee developed over time:

From the beginning he had our respect and we gave him our confidence. As his rare qualities became understood and appreciated, we all came to have for him a deep personal affection and⁴ trust. Each of us felt it a privilege to be his personal friend.

Maclaurin fairly rapidly evolved a full time administrative group within MIT, consisting of the Registrar, Walter Humphreys; the Bursar, Horace S. Ford; and the Dean of Students, Alfred E. Burton. As the leader of the group Maclaurin showed his liking for working in an informal fashion. The team met more or less daily. It did not adhere to strictly formal definitions of the roles of Humphreys, Ford and Burton. Maclaurin instead chose one or other of them to meet special problems as they arose, matching the problem to the man, rather than the role definition. He seemed to know intuitively how to delegate responsibility. When he asked one of them or a group to tackle a particular task he would turn the whole job over to them. In getting tasks done he encouraged his people to exercise the maximum freedom of action. The team and its original members continued to function throughout Maclaurin's presidency.

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1. Quoted in Pearson, op.cit, p. 170.
 2. Hart in Pearson, op.cit, p.170.
 3. Hart in Pearson, op.cit, p. 170.
 4. Hart in Pearson, op. cit, p.171.

The ways in which he led the administrative group and the executive committee showed that his assumptions and style emphasized interpersonal skills.¹

From the beginning of his presidency Maclaurin was frequently away from Boston on business trips, and could not always be present at faculty meetings. This had the result that he was not well known to some members of faculty. But his relations with them were nevertheless smooth: over time confidence grew in his steadfast efforts for faculty and the Institute. Close, informal and cooperative effort characterized Maclaurin's relations with the office holders of the alumni association in the shared effort to develop MIT. In the little time available to him he attempted to secure feedback from graduating students, the Institute's final 'product'. He built up the annual practice of attending a social gathering of about twenty graduating students, held at a professorial home. These evenings were timed to take place just before the June graduation ceremony. In the course of the evening he would chat with the graduands about their reasons for coming to MIT, and what changes they would like to see made in the place. In this way Maclaurin hoped to tap informed student views at a time when they would feel least dependent on their acceptability to the Institute.

Given the corporation, executive committee, the administrative group and alumni association officers to help him as president, Maclaurin remarked that he was in the position of the English solicitor who said that his sole responsibility was to

distinguish hard cases from easy and routine ones. The latter I hand over to the office boy, the former to the barristers: I have nothing left to do but collect the fees.²

In the conduct of his office Maclaurin showed an abhorrence of presidential affectation and ritual. He dispensed with protective barriers in the form of a barrage of secretaries, and during his

1. A further indication of Maclaurin's need for affiliation and competence in small group situations lies in his long term enjoyment of club meetings and small dinner parties, evinced earlier in Wellington and New York, as well as in Boston.

2. Pearson, op. cit, p.164.

presidency maintained only one. In the beginning the Institute provided him with a young assistant, as was the custom. Maclaurin soon found him superfluous, got rid of him, and did not replace him. He operated with an 'open door', which encouraged people to call to consult him about work or personal problems. They found him an extraordinarily patient and non-judgmental listener.

One of the inescapable duties of the chief executive of such an institution as MIT was to represent it to the public by attending dinners and ceremonies armed with a speech. Early in his career in Boston he wrote an epitaph for himself: 'Here lies A.B. elected president 19- , he attended 2,000 banquets, in the course of which he gradually became of more girth and less consequence, until he disappeared five years after his election'. He nevertheless obtained a certain satisfaction from speech-making, probably because of the opportunities they furnished to influence people in the direction of his policies. His amusing after dinner stories were always aimed at influencing, rather than merely amusing. In essence he emphasized the functional rather than the ornamental or ceremonial aspects of his office.

The counterpart to Maclaurin's emphasis on face-to-face relations in small groups as a way of leading MIT was his suspicion and puzzlement at the emphasis of other people on elaborate formal organization. He called this 'organization for its own sake', and was averse to business efficiency practices à la Scientific Management being applied to university organizations. In a review of a bulletin by Morris L. Cooke, written at the request of a New York newspaper, he enjoyed himself at at Cooke's expense:

The report is written from the point of view of the man who is used to report on the efficiency of a glue factory or soap works....

The most serious objection I see to it [the report] lies in its abuse rather than its legitimate use. I fear that it will tend to increase the administrative machinery of our educational institutions, machinery that is already far too much in evidence....

Others may be led astray by the specious analogy with the workings of a factory...It does not require any special effort in this country to stimulate admiration for the 'snap and vigour' of the business administrator', and the value of snap in the domain of education may very easily be overestimated. Especially am I fearful of its effects on the teacher and the investigator....

Think for a moment of the effect on men like Newton or Faraday of the 'snap and vigour' treatment that Mr Cooke suggests in his discussion of research. They must make frequent reports on the progress of their research, and constantly justify the expenditure thereon. The Superintendent ...calls upon Mr Newton.

Superintendent...:Your theory of gravitation is hanging fire unduly. The director insists on a finished report, filed in his office by 9 a.m. Monday next, summarized on one page, typewritten, and the main points underlined. Also, a careful estimate of the cost of the research a student hour.

Newton : But there is one difficulty that has been puzzling me for fourteen years, and I am not quite -

Superintendent... (with snap and vigour): [I] guess you had better overcome that difficulty by Monday morning or quit.¹

* * * * *

Maclaurin's first major presidential effort was intended to secure the immediate financial future of MIT. The annual grant of \$25,000 from the State of Massachusetts was due to expire after 1910. The Institute should clearly try to make the strongest possible case for continued state support to tide the organization over its difficult straits. The question was on what grounds to make the case. Should MIT rest its case on the defensive ground of dependency and financial weakness? After intensive discussion between the president, executive committee, corporation, alumni association and faculty a task force under Maclaurin's chairmanship was formed to tackle the issue in an optimistic and confident way. The approach adopted rested essentially on the proposition that the contribution of the Institute to scientific applications and educating graduates benefitted the state: these useful activities justified a generous subsidy.

Unified efforts by the task force and supporters led to a bill being introduced to the state legislature to grant the Institute \$100,000 each year for ten years. A variety of systematic efforts were made, converging on the objective of ensuring its successful passage. Members of the alumni association talked privately to legislators. A two day Congress of Technology was planned, the theme of which was to be the role played by science and technology in the development of industry.

1. Tribune, December 25, 1910.

The whole conception for a Congress was intended to serve a promotional purpose, the dramatize the value of MIT's activities. The concept had originated in the creative mind of Arthur D. Little, a very active alumnus.¹ These unified and comprehensive efforts met their reward, in the face of 'somewhat formidable opposition', in securing the \$100,000 for ten years. The old grant had been quadrupled. In this way a central and reliable sheet anchor to MIT's funding was established. It constituted Maclaurin's first success as organization leader, a success for his face-to-face team play methods, and his emphasis on upward influence.

At the Congress Maclaurin gave a paper on Rogers and university education which even today makes remarkable reading. He began with a statement about the motivating value of definite organizational objectives: 'The Institute would... never have achieved what it has,' he declared, if it had not had clear and definite organization goals:

There has never been any uncertainty or indefiniteness as to what the Institute is aiming at in its scheme of education ... so many schools and colleges drift around, apparently without compass or rudder, with no definite idea as to what port they are trying to reach, or how they should go to reach it... [MIT] is an institution that, from the very outset, has had very definite ideas on these matters. 2

He then turned to elaborating many of the values he had originally outlined in his inaugural:

[Rogers] knew, as every educated man must know, that the fear of ... useful knowledge is exaggerated, and for the most part groundless. He knew... that the oldest universities all began with a clear recognition of the bearing of their studies on definite callings; and he recognized clearly that it was not a merit, but a defect of these schools that most of them had failed to keep pace with the changes in the character of human occupations that time had brought forth. 3

For the guidance of the new Institute Rogers laid down a few simple, but far-reaching principles, which have

1. Little had graduated from MIT in 1885, and established the well known Cambridge consulting firm which bears his name. He had co-founded both The Tech in 1901 and Technology Review in 1899.

2. This quotation is taken from the text of his speech, given in 'The Congress of Technology', Technology Review, Vol. 13, 1911, pp. 309-310. The italics are Maclaurin's.

3. Maclaurin, *ibid*, p. 310. Maclaurin's italics.

governed the Institute ever since. The first of these is the importance of being useful. There is, of course, no necessary antithesis between the individual and the social end in education. However, the laying of the emphasis is important, and Rogers laid it unhesitatingly on efficiency in the service of society... [Rogers] set forth the value and the dignity of the practical professions for which they [students] were to prepare themselves.¹

Rogers emphasized, said Maclaurin,

'the value of science in its ... applications to the practical arts of life, to human comfort, and health, and to social wealth and power'... when the Institute was... founded the importance of science was kept steadily in view. He regarded the scientific habit of thought as specially valuable in practical affairs and consequently in education he laid greater stress on broad principles and their derivation than on details of fact, and he held that the spirit of science was more to be desired than all the gold of scientific knowledge. These are his words: 'In the features of the plan here sketched, it will be apparent that the education that we seek to provide, though eminently practical in its aims, has no affinity with that instruction in mere empirical routine which has sometimes been vaunted as the proper education for those who are to engage in industries. We believe, on the contrary, that the most truly practical education... is one founded on a thorough knowledge of scientific laws and principles, and one which unites with habits of close observation and exact reasoning, a large general cultivation!... It will be seen from this that Rogers made no fetish of science, and that he welcomed every really liberal study....

[Rogers] understood that when one gets to the root of things in education, the method rather than the subject is of supreme importance, and his insistence on the value of method in teaching was the cardinal doctrine in his creed and the one that has contributed most to the success of the Institute.... What method, then, is the right one? His fundamental idea was not original...

[and] has been clearly expressed before, but rarely, if ever, adopted... as the basis of educational method and applied systematically... The idea is... of learning by doing. 'How can a man learn to know himself?' asked Goethe. 'Never by thinking, but by doing. Add to this the doctrine of Carlyle that 'the end of man is an action and not a thought, though it were the noblest', and you have the whole thing in a nutshell. 2

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With the immediate viability of MIT in the existing building complex secure, Maclaurin turned his attention to acquiring a new site for rebuilding the entire Institute. He 'patiently examined a long list of possible locations and, with expert advice, weighed their several

1. Maclaurin, *ibid*, p. 310. Maclaurin's italics.
2. Maclaurin, *ibid*, pp. 310-311. Maclaurin's italics.

advantages and disadvantages'. It was of course necessary to examine which site would be the most suitable from the viewpoint of present and future function. Maclaurin and his advisors reached the conclusion that MIT could be relocated on one of several alternative sites in the greater Boston area. The corporation gave him power to appoint a committee to make the final selection from the handful of alternatives ultimately considered. This was a striking illustration of the confidence he already inspired. But instead of opting for a particular one - and there was one he especially favoured - he instead began a set of complex, interdependent negotiations to secure options on the alternative sites. When the options were secured it became imperative to secure about \$1 million quite quickly in order to realize on the options.

He appealed for support to likely sources of funds, such as the Rockefeller and Sage Foundations, Andrew Carnegie, a noted 'big giver', and T. Coleman du Pont, an MIT graduate. They all turned him down. Du Pont, president of E.I. du Pont de Nemours Powder Company, did say in his letter of refusal, however, that he was prepared to see Maclaurin to discuss the Institute. Maclaurin set out to visit du Pont, the broad features of which he summarized some years later:

I arrived in Wilmington early in the morning and although du Pont was at that time a very sick man he was up to greet me.... We got to business immediately.... I described the broad features of our condition and said that we must move to a new site. He asked what sites were under consideration and wanted a brief description of each. The first one I mentioned was 25 acres in area. He said 'Can't you double it?' and I said 'Not this particular site.' 'Well,' he said, 'I don't like the look of twenty-five acres. It seems to me too small. Almost invariably when a man comes to me to approve plans of a new factory... I tell him to double the size of everything and almost invariably I wish afterward that I had used a larger factor of safety. [Massachusetts Institute of] Technology will occupy a great position in the future and must have room to grow. I don't feel much attracted by twenty-five acres, but I should be interested in fifty'. I agreed with this policy, but told him, of course, that the main obstacle was cost. 'What would fifty acres cost?' he asked. I told him 'Three-quarters of a million', and he said that he would contribute half a million. 1

The outcome of the interview with du Pont demonstrated the proposition that there was at least one rich, shrewd man who concluded that MIT was worth supporting. Maclaurin had provided a piece of contrary evidence to the prevailing assumption that rich industrialists would not give to the Institute. And where one gave maybe others would follow. The meeting with du Pont also demonstrated Maclaurin's ability to 'reach' wealthy businessmen, who were supposed to be inaccessible, and probably not very interested. By his success MIT was no longer to be shackled to Boston attitudes. And the success entrenched him as the real leader, as well as the formal leader, of MIT. The rest of the money needed to purchase the site, a splendid property in Cambridge bordering the Charles River basin opposite the heart of Boston, was contributed by members of the corporation and friends of MIT. The du Pont gift was becoming the seed crystal of the Institute's rise in the 20th century.

After securing the site Maclaurin focused his attention on a search for funds to permit the Institute to build on it. Suitable buildings were likely to cost at least \$2 million. The maximum contribution which could be expected from MIT's generally youthful, not often rich and not numerous alumni was estimated at \$750,000. More than \$1 million would thus have to be found elsewhere. Maclaurin considered that 'the obvious policy was to try to get one donation so large as to remove doubts that the whole thing could be done'. With this end in view he journeyed to alumni banquets and luncheons in New York, Philadelphia, Pittsburgh, Washington, Chicago and Rochester, among other cities, always on the lookout for a 'big giver'. He bore the news of the successes over the state grants and the du Pont gift, using optimism and confidence in the future as an approach to fund raising. But he returned to Boston disappointed. While on the visit to Rochester he took the opportunity of spending a day looking at the principal plant of Eastman Kodak, the photographic manufacturer. George Eastman, the self-made, self-educated chief executive of the company was away, but it did not seem to matter too much. Eastman had the reputation of not being interested in supporting higher education, despite his great wealth. His reputation derived from a gift of \$78,000 towards a science building for the local university. Eastman had followed up the gift with the remark that he had made it because the university's president had 'let me alone'.

At the plant Maclaurin talked to a number of leading managers in the company, including Frank W. Lovejoy, a MIT graduate, and looked around:

I was greatly impressed with the evidences on all hands of interest in scientific methods, by the number and high quality of the scientific men who were employed not only as technical experts but as executives, and by the careful plans that were made for utilizing scientific improvements at every stage of the company's growth. This evidence of high intelligence everywhere and of appreciation in an unusual degree of the value of scientific men suggested to me that... [Mr Eastman] might be interested in [Massachusetts Institute of] Technology. 1

Maclaurin was showing his optimism. But Lovejoy put in some spadework to try to cultivate an interest in MIT on the part of Eastman, and suggested that Maclaurin write proposing a meeting. The result was a letter from the president to Eastman, 'telling him something of our problems', to which Eastman replied suggesting a date and place. The two men met for dinner at the Hotel Belmont in New York, and spent the evening going over the Institute's situation carefully. They considered the estimates concerning the probable costs of the various aspects of the building programme. Eastman, said Maclaurin,

made it clear that his... interest [in MIT] would depend on its problems being attacked in a bold way.... He... believed that [Massachusetts Institute of] Technology had only to embrace its destiny to rise to a position of transcendent usefulness and his only anxiety... lest at any time narrower views should prevail. 2

When Eastman was about to leave he suddenly asked, 'What will it cost to put up the new buildings?' Maclaurin answered that it would cost about \$2.5 million. Eastman said 'I'll send you a draft'. Lovejoy had done his spadework well, and Maclaurin had found his 'big giver'. By his gift Eastman showed he shared Maclaurin's faith in the future of MIT, and his confidence in the Institute's leader. In making his gift Eastman made one condition: that his name as donor be withheld, even from the executive committee. Maclaurin agreed to refer to him only as 'Mr Smith'. The identity of Mr Smith became a closely guarded secret, known only to the two men's private secretaries, Frank Lovejoy and Mrs Maclaurin for eight years. The pseudonym Smith intrigued people, and Maclaurin subsequently used it for promotional purposes. Mr Smith 'became one of the best known and most discussed big givers'.

1. Maclaurin, ibid, p.46.

2. Maclaurin, ibid, pp.46-47.

With funds secured to fuel the building programme, Maclaurin focused his attention on the multiple functions of the Institute which implied desirable design characteristics in the new buildings. The pile was to be purpose built, as far as interiors were concerned. Form was to follow function. Under the president's leadership as coordinator of the construction company and the architect, MIT examined in minute detail the present and future needs of the various departments and the organization as a whole. The architect's solution to the design problem was to accomodate the Institute under one roof, in the form of a continuous building constructed around a large court, flanked by two smaller courts. The structure was expressly designed to permit the expansion of a department without disrupting the activities of the others. It was decided not to use interior walls for support. In this way it would be easy to move them around to meet spatial requirements as needs changed. The departments most likely to expand were placed so that as the need arose a new wing could be extended away from the façade, or existing wings connected. The building expressly recognized the premise that in a time of change architecture, as well as people, needed to be flexible.

Construction began in 1914 as the lights were going out all over Europe, and the Continent plunged into World War I. During the next four years Maclaurin was daily faced by masses of problems, decisions and questions, which required him to be a master of detail. He contributed coherence, direction and stability to the whole enterprise. Even before the buildings were finished he was already thinking of necessary extension of them in the 'not distant future' to meet burgeoning needs. As construction neared completion Maclaurin turned his energies toward the problem of transferring the activities and hardware of the Institute over the river to its new environment at Cambridge, without disrupting its continuity or impairing its effectiveness. He utilized to the fullest extent the help and cooperation freely given by members of the Institute, and contributed integrating leadership to the whole affair. In 1916 the job was done. On a summer's night a barge sailed across the Charles River to Cambridge, bearing the Institute's president and faculty, together with the Charter and Great Seal. The barge was a specially

constructed copy of the state barge used by the Venetian republic in its most glorious days. Forty to fifty thousand people, including the Assistant Secretary of the Navy, Franklin D. Roosevelt, watched or took part in the celebrations as part of the dedication ceremony.

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After the completion of the 'great drive' to fund and complete the buildings Maclaurin turned to a new effort in a less concrete direction: to develop research at the Institute. Soon after becoming president he had found that with one exception research at MIT was carried out in discrete and episodic fashion. Particular projects were pursued by groups or individuals for a year or two, and then terminated. The only exception to this pattern was the Physical Chemistry Research Laboratory, whose chief managed to carry forward a continuous programme. Maclaurin formulated the long range goal of providing a continuing research base linked to each department or school in the Institute. The establishment of aeronautical engineering at the Institute illustrated his approach to the introduction of new activities. This new field was more or less simultaneously established in the teaching, theory-building and research senses.¹

Maclaurin took the definite view that research should not be limited to applied or short term 'practical' applications; on the contrary he emphasized the value of pure research, especially in chemistry and physics, more strongly than other kinds. This might have been because pure research was at the time not so well recognized in America. Industrial progress via applied research, he believed, depended ultimately on pure research. There was also, he thought a manpower problem affecting research:

one of the great problems of scientific education today is to prepare an adequate supply of men.... What is particularly needed... is a large supply of men with a sound knowledge of the fundamentals of science and trained to careful observation in the conduct of research.²

He was convinced that MIT should play a leading role in educating these men.

1. The aeronautical research laboratory consisted initially of a wind tunnel, the first established at any university or institute of higher education in the United States. It was imported from England in the summer of 1914.

2. From the text of a speech given in Technology Review, vol. 19, 1917, pp.154-155.

In order to make research a central rather than peripheral activity of the Institute Maclaurin knew he would have to change attitudes and raise large funds. To achieve these sub-goals he conceived an educational effort directed towards all the publics connected with MIT: the corporation, alumni, faculty and the general public. He began by forming a joint committee of the members of the corporation, faculty and alumni on the promotion of research, and invited leading pure scientists to address meetings and gatherings about the value of research. In January 1917 he proclaimed to an alumni meeting 'The great drive now must be for research and here ... we shall need much more money.' But instead of the 'drive for research' gathering momentum as his earlier drives had, American involvement in the First World War saw its abrupt demise.

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From the first Maclaurin had considered the question of the respective distinctive competence or comparative advantage of MIT and Harvard University, and what relationship - if any - might be appropriate between them.¹ After much study he became convinced that the interests of MIT and higher education in general would unquestionably benefit from close cooperation with Harvard in teaching applied science, especially engineering. He formulated the view that if the joint resources of the two organizations could be concentrated together the synergic outcome would surely be the finest school of engineering in the world in teaching and research terms, an immeasurable gain to applied science, and a significant contribution to the prosperity of the United States. He believed that MIT did not exist for itself alone, but rather to meet the needs of the community in its environment. Community needs were primary, Institute needs derivative and secondary. The Institute was an open system, existing to meet societal needs. Close cooperation between MIT and Harvard would avoid wasteful duplication in expensive engineering plant and resources, he concluded, while still preserving the autonomy of each.

1. Pearson, op.cit, pp.181-240, discusses the negotiations between MIT and Harvard at length. The following account draws selectively on his description.

The position of engineering at Harvard University before World War I had two characteristics. First, the engineering effort of the University was comparatively small and weak. Second, Harvard had received a large bequest to support engineering in the form of the will of Gordon McKay, a shoe manufacturer, and wanted to put the money to work without years of delay. Maclaurin and A. Lawrence Lowell, the Harvard president, together with their respective committees, quickly agreed on the desirability of joint effort in engineering to meet the objective of benefiting the community, a goal they both strongly supported. The birth of a jointly backed school of engineering became the strongly supported superordinate goal. One of Maclaurin's letters to Lowell in 1912 made this point explicit:

I do not . . . believe that anything worth while can come of these discussions, unless we all dissociate ourselves as far as possible from the point of view either of Harvard or of [Massachusetts Institute of] Technology. I should not even have raised the question, had I not believed, as I still do, that you agree with me that our duty is neither to Harvard nor to [Massachusetts Institute of] Technology, but to the community as a whole. You want the young engineer to get the best education that he can, whether he comes to [Massachusetts Institute of] Technology or goes to Harvard. and any scheme of cooperation must be ineffective unless it is governed by this fundamental idea.¹

At the beginning of the contacts between the two presidents agreement was reached concerning a method of working, without which negotiations would probably not have taken place at all. It was agreed that all negotiations between the presidents and executives were to remain confidential until agreement was reached. This recognized the need for calm and detailed discussions, not under the pressure of public opinion inside and outside the two organizations. It especially recognized the bitter and divisive conflict within the Institute over the earlier plan of alliance.

But while the presidents might attain consonance over goal and method of working, there were severe difficulties over ways and means of reaching the desired goal. Throughout the lengthy negotiations between the two bodies, summarized by frequent correspondence between Maclaurin and Lowell, Maclaurin's grasp of the organizational dynamics of the situation was crystal clear. At one point, for example, Lowell introduced the notion of the difficulty of agreeing upon the distribution of a

1. Letter dated February 29, 1912, quoted in Pearson, op.cit, p.194.

cake if each of the claimants feels entitled to the whole of it'.

Maclaurin replied,

It would seem to me that we are discussing the making of a cake rather than its distribution, and I agree that the cake will not be very palatable unless the cooks restrain their individual preferences for the placing of the ingredients. ¹

Maclaurin had began negotiations with Harvard when MIT was still in a state of financial crisis. As MIT's financial condition improved he stressed and even anticipated its growing strength, and used it as a bargaining tool. After his success with Eastman he emphasized to Lowell

One fact... seems to me to have an important bearing on our problem ... the Institute is now bound to erect on its new site the best laboratories that can be designed to meet the needs of students... at Massachusetts Institute of Technology. It is bound to do this because it has accepted the offer of millions given for this express purpose. ²

In a letter he told Eastman that he felt

the readiness of the Harvard authorities to accept the suggestions made by Massachusetts Institute of Technology was largely due indirectly to the momentum of the Institute that has been gained through your support. ³

The long labours of the presidents drew to a successful conclusion in the autumn of 1913. An agreement was emerging affecting civil, mechanical, electrical, metallurgical and mining engineering, under which Harvard students would be taught in MIT's buildings by a joint staff of University and Institute professors. MIT's contribution to the joint effort was space, equipment and a large part of the teaching. Harvard's contribution was its relatively small faculty and \$100,000 annually, mostly from the McKay endowment. All members of faculty included in the enterprise were to be listed as members of both institutions. Each institution was to consult the other concerning new appointments to the faculty. Professors were to be paid by whichever institution appointed them. Graduating students were to receive the degrees of both institutions. No merging of either the governing bodies nor the property interests of Harvard and MIT was contemplated. For administrative purposes the president of MIT was to be the formal leader of the joint school, and agent of Harvard. There was a provision that when future presidents of the Institute were chosen, the president of the University would have the right of membership on the selection committee.

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1. Letter dated March 23, 1912, quoted in Pearson, op.cit, p.197.
 2. Letter dated March 23, 1912, quoted in Pearson, op.cit, p.197.
 3. Letter dated June 13, 1913, quoted in Pearson, op.cit, p.140.

These arrangements allowed Harvard to put to immediate good effect the funds bequeathed by McKay, and made available a wider, better range of engineering degree programmes. The agreement made available to MIT financial resources to energize engineering, its central activity, more strongly than ever before, and in addition brought new faculty resources. With the comprehensive draft agreement in hand the two presidents and their committees began to consider ways of presenting it to their respective alumni, faculty and public in such a way as to secure agreement. MacLaurin was keen to bring the McKay trustees into the work at this point so that their views could be canvassed, any adjustments made in the agreement, and the final version have their support. But this matter lay in the hands of the Harvard leadership who believed it unnecessary.

For his part as leader of the Institute MacLaurin asked past, present and future presidents of the alumni association to study the draft agreement, in confidence, and make suggestions or criticisms of it. This way of involving the alumni leadership proved effective, and a number of their suggestions were incorporated into the final document. MacLaurin then presented the agreement to the alumni council as 'an alliance between independents, and no merger'. The heads of the four departments affected by the agreement were consulted by him, and gave their approval. He felt that further consultation with rank and file alumni or faculty would be dangerous, as he thought that many or some would exhibit an institutional, provincial perspective towards the agreement, which could threaten the success of the whole effort. His attitude seems justified in the light of the subsequent experience of two departments, who were expected to work together under the agreement, but in fact became deadlocked in their negotiations for two years. MacLaurin commented to Lowell in a note on the attitudes of the faculty involved:

In them there is still something of the old Adam of institutional pride, a fact that must, of course, be taken into consideration in any practical scheme.... The prolonged negotiations... between these two departments... have indicated something of what might have been expected in the larger matter of cooperation... had we attempted to bring the faculties into exact agreement before having anything done.¹

1. Letter dated May 2, 1916, quoted in Pearson, op.cit, p.207.

The final version of the agreement was approved by the MIT corporation and the University on January 9, 1914 at the same hour. For a few months afterwards Maclaurin acted as expounder and advocate of the plan to the regional alumni centers in eastern and mid-western cities. His addresses were greeted by alumni audiences with interest and enthusiasm. At the beginning of the 1914-15 academic year the Harvard professors began teaching at MIT and the agreement began to work in earnest.

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By the early winter of 1916-17 many people in the United States began to anticipate American involvement in World War I. In the personal sense Maclaurin was strongly committed to the Allied cause. The country of his birth and the land of his youth had both been deeply involved in the fighting for years, and had already suffered grievous losses of men in battle. Some of his old friends were dead. His uncompromising attitude to the U.S. and the War was expressed in a letter to Eastman:

I think that this country must get into the war in order to retain its self-respect. It seems to me indecent that we should have to rely on the protection of the allied fleet, and it seems to me altogether unworthy of a great and generous people to rest content with making money when the free peoples of Europe are giving their very lives with the utmost lavishness for a cause that is just as much ours as theirs. ¹

As leader of MIT Maclaurin sensed both the opportunities for service to the nation and the Allies, and threats to institutions of higher education inherent in a situation of total war. In the years between 1914 and when the U.S. entered the War he repeatedly pressed the federal government to recognize the value of the Institute's programmes in the military and strategic senses. As he said to Eastman in the same letter,

For years I have tried unsuccessfully to impress on different officials in the War Department the very obvious fact that... modern warfare... in nine-tenths a matter of straight engineering. ²

Despite years of discouragement, he remarked,

we are doing what we can to get ready for the emergency so that we can place the scientific resources of the Institute at the disposal of the country for the solution of some of the scientific problems that war presents. ³

1. Letter dated March 30, 1917, quoted in Pearson, op.cit, p.260.

2. Letter dated March 30, 1917, quoted in Pearson, op.cit, p.261.

3. Letter dated March 30, 1917, quoted in Pearson, op.cit, p.260.

When the United States severed diplomatic relations with Germany on April 6, 1917 Maclaurin was ready. On the very same day he telegraphed the War Department in Washington to place the human and material resources of MIT at the disposal of the government.¹ By the end of April MIT's physical facilities became one of six ground schools for men destined for the army and navy air forces. Several war service schools were in operation at the Institute by 1918, active in aviation training and marine engineering, naval architecture, radio engineering, and public health. To accomodate the large numbers of trainees sent by the government a proportion of the existing buildings at Cambridge were converted to the new uses, and temporary buildings erected. War related activities continued at the Institute until long after the Armistice.

The American war machine quickly brought about a high demand for experienced engineers. The ranks of MIT's faculty were decimated by the entrance of many into military and civilian service. At the same time the Institute's undergraduates faced a dilemma, 'torn between the fever to enlist' and the desire to finish their degrees. Their dilemma was recognized: Maclaurin's administration reorganized undergraduate activities so that they included a large measure of military drill. Despite everything, some research continued. War-related research programmes in aeronautics, chemistry, mechanical and electrical engineering, a number of them highly confidential, were carried out during the war.

By pressing MIT's claims to usefulness on the federal government at every opportunity Maclaurin ensured for the Institute a broad, state-approved range of activities during the War. It could with justice be said, 'No American institution of learning made a greater contribution to winning the War'. The turbulent changes in the needs of American society and polity brought about by the War had been met by rapid organizational responses from the president and administration of MIT. In effect Maclaurin re-interpreted the Institute's chosen mission of service to society in the light of the extreme, dislocating environmental conditions. These in turn vastly altered the nature and complexity of the task facing MIT's leadership. Maclaurin showed his extraordinary 'power

1. Maclaurin had carried out similar swift action on a previous, less heroic occasion, at the time of a threatened firemen's strike in Boston, when the city's policemen were already on strike. While the firemen debate whether or not to go ahead with a strike MIT's department of mechanical engineering, under Maclaurin's leadership, organized a fire department, 'ready to step in and save the city'. The firemen decided not to strike.

to keep in order a situation that tended towards chaos'. And Maclaurin's radical measures preserved some modicum of MIT's peacetime activities, permitted it to maintain continuity in a period of disruptive change, and the potentiality for later growth and expansion.

At the opportunistic level, the wisdom of his rapid action in volunteering MIT was war service was shown in the predicament of higher education in the country. The drafting of American youth into national service, and the movement of the economy and society to a war footing, left hundreds of universities and educational institutes seriously short of students and funds. Many were on the brink of dissolution when Maclaurin was called to Washington to do something about it. Appointed Director of College Training by the War Department, he mounted what added up to a rescue operation for 250 American universities. It was not long before he began applying his interpersonal skills on visits to government officials and members of the federal cabinet. An incident at this time illustrates the directness of his methods. On a particular visit to Washington he was told that he would never be able to see Secretary Baker, even though his business was important. Maclaurin's response was to visit the White House where, over lunch, he discussed the problem with President Wilson and settled it, much to the amazement of his associates. His action was precisely the kind of approach that he must surely have learned from years of working with New Zealand cabinet ministers when he was at VUC in Wellington: the direct personal method characteristic of a small, egalitarian society.

Maclaurin played a leading role in setting up short term goals for the universities so they, like MIT, could train students for the exigencies of war while preserving their traditional skills for peace. It could with justice be said that

It was largely due to his wisdom and tactfulness that the colleges were able to carry on in... distracting times and to resume their normal status practically unimpaired when war ceased.¹

The wear and tear on Maclaurin of his wartime activities was severe. W.B. Munro, as assistant to him at the time, felt that the job he did 'was really big enough for three or four men'. Maclaurin, said Munro, 'Felt it the heaviest and most nerve-wracking task he had ever assumed'.

1. J.P.C.S., 'Richard Cockburn Maclaurin', in Dumas Malone (ed), Dictionary of American Biography, Vol. 12, Scribners, 1933, p.120.

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At the close of the War Maclaurin was confronted with two new and most serious threats to the viability of MIT. The first concerned the joint venture with Harvard. The unconsulted trustees of the McKay endowment, the fund used by Harvard to support the joint engineering school had moved to challenge the agreement in the courts. At the court hearing it was established to the Supreme Court Justices' satisfaction that it had not been McKay's intention to support excellent engineering education per se, but rather to support engineering education at Harvard University. In handing down their judgment on the case the Justices commended the educational wisdom and economy of the joint agreement. But they rejected it on purely legal grounds: Harvard and MIT'S usage of the McKay funds for the school was inadmissible. The second threat to MIT's viability came from the State of Massachusetts. A change in the State's constitution forbade appropriations for privately controlled educational institutions: the \$100,000 annual grant for 1918 was to be the last. These two changes turned the clock back on the Institute's financial situation to a position akin to that at the time of Maclaurin's inauguration.

Maclaurin was bitterly disappointed by the failure to maintain the joint activity with Harvard, and fully conscious of the seriousness of the cash flow situation in both the short and long terms. But he was not disheartened. First he took action to salvage what he could of the state grant to tide MIT over the crisis. By means of personal and legal representations he contended that the grant of 1911, the first of the ten yearly grants arranged at that time, constituted a ten year contract between the state and the Institute. For this reason it did not come within the meaning of the constitutional prohibition. Maclaurin had not been educated in law for nothing. This viewpoint was in the end accepted by the legislature. It was agreed that the grant should be continued every year until 1921, but not beyond. The pre-war input to MIT'S finances had been affirmed, but the real end of state financing was surely in sight.

At a corporation meeting in December 1918 it was decided that MIT would in two years time need an endowment of at least \$7 million to reestablish the Institute on a sound financial basis. Maclaurin was asked to constitute a special committee to pursue this objective, and put together a group of eight persons, including himself, and asked

du Pont to chair it. The committee rapidly set to work. It became obvious by June 1919 that the best efforts of the members, including Maclaurin, were making little impression on the large target sum. Maclaurin spent a day with Eastman and 'went over the...situation carefully'. He came back to the Institute bearing the news of a conditional offer from Eastman of \$4 million, which could bring in an income of \$200,000 per year. Eastman's condition was that MIT raise, by one means or another, a further \$3 or \$4 million. Despite the difficulties Maclaurin dramatized the need for maximal organizational effort and set the objective at the higher figure. He then gave up his summer vacation to the cause of fund raising. Over and above the Eastman millions he had by the autumn raised a further \$1.25 by these efforts. It was evident, however, that only through an organized effort of the alumni on a large scale would the target be reached in keeping with the deadline of July 1 1920 set by Eastman. A race against the clock began. The corporation, alumni and students were quickly involved in participating in the work. A series of committees and secretariats were set up. It seemed obvious, however, that the money still required to meet Eastman's deadline would not be obtained by gifts alone, even with the help of a major campaign. Some other scheme was needed.

Two schemes already in active operation at the Institute on a modest scale offered some possibilities. One was an arrangement between AT & T and MIT under which the company contributed \$15,000 a year for general research in the Department of Electrical Engineering. The payoff to the company came in the form of relevant research sparked off by the contribution, and the education of skilled men who would later join the American electrical industry. The other scheme was an arrangement under which the Applied Chemistry Research Laboratories carried out specific research projects ('contract research') for industrial organizations for cost plus 100 per cent. The profits made formed the laboratory's endowment, and were used to finance pure research.

MIT'S administration generalized and systematized concepts from these schemes to cover the entire Institute. A 'Technology Plan' was formulated with the objective of providing a clearing house for scientific, technical and industrial problems, giving industrial organizations access to the knowledge, research and consultative skills of Institute members

relevant to particular products and processes. The Plan aimed 'to bridge the gap between the school and the factory, between the idea and the process'. Companies could join the Plan by the payment of an annual fee for five years. For this fee MIT would provide liaison and consultative help from the departments in touch with the client's problems. The Plan created an administrative Division of Industrial Cooperation and Research within the Institute to put the concept into practice.

The endowment fund campaign and the efforts to enlist companies under the Plan quickly gathered strength from the dedicated efforts of the president, corporation, alumni and student organizations. By mid December 1919 \$3 million of the \$4 million necessary had been secured. On Friday January 9, 1920 the target sum was reached, five months ahead of schedule.¹ Nearly 10,000 donors, alumni and undergraduates had between them contributed \$2.9 million. Even the students had contributed at an average of over \$50 each, an effort which deeply impressed Maclaurin. Almost 200 industrial organizations had paid fees totalling \$1.2 million under the Technology Plan. Men who had refused to give to MIT in their private capacities had seen to it that corporations in which they were managers made substantial contributions.

The endowment campaign assured to MIT, for the first time since its birth, funds adequate to provide independence and security. Given such funding the Institute was at last in a position to fulfill the mission first proclaimed for it by Rogers, and articulated and operationalized by Maclaurin. But on the very Friday the thumping success of the campaign was announced Maclaurin was ordered to bed. As he lay dying he murmured, 'It has been an arduous life, but well supported from the first'. The following Thursday, worn out by his unending efforts for MIT and the country, he died of pneumonia. He was 49 years old. His body lay in state under the dome of the Cambridge structure which became his monument.

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1. 'Report of the Alumni Committee on the Educational Endowment Fund', Technology Review, Vol. 22, 1920, pp. 173, 175, 232.

In reviewing Richard Maclaurin's later life a minor and a major theme can be discerned for analytical purposes, although in practice they merged into one. The minor theme concerns his long term career development, and the integration of his identity in the role of president of MIT; the major theme concerns his significance as the leader of the Institute. The two may be summarized as the impact of the presidential role on him, and his impact as president on MIT. Until he came to the Institute Maclaurin's career had been affected by a chronic problem of identity, of who he was and who and what he should become.¹ One component of this problem had been an issue about his geographical location and societal affiliation. This problem remained unresolved when he came to Boston. The confusion concerning his perceived national identity - as a Scottish born, New Zealand raised, and New Zealand and England-educated academic - was illustrated by the remark of one of the graduate students who had worked closely with him at Columbia University in 1908-9: 'We found that he had a very different sense of humour from that which he had thought belonged to an Englishman'. Scattered evidence from his early years at MIT indicates, at first sight, that Maclaurin may have considered himself to be a Scot. He and others, such as James Bryce, the British Ambassador to the United States, referred to him as such. At Institute banquets and dinners he was, in the early years, preceeded by the drone of bagpipes, and contributed to jokes about Scotland as if he was a Scot. But the main purpose of the pipes may simply have been an attempt to give him a signature tune, a trademark. Pearson comments that the function of the pipes was to warm up the audience before his somewhat cool, rather unemotional speeches.

Every year since his arrival in the United States, until the First world War put an end to it, Maclaurin and his wife and family spent each summer vacation based in England. Did he therefore still emotionally identify himself with England, and did he still seek an appointment at an English university? No direct evidence is available that can answer the question. But an indirect answer can be attempted. One impetus leading

1. See McLennan, op.cit, passim, especially pp.33-36.

him to spend successive summers in England was his wife's predilection to being with her parents, who had retired to England.¹ And he himself much enjoyed vacationing in England. In terms of attitudes and behaviour, however, he was no academic Englishman or Scot. The 'democratic', informal, team-centred processes by which he led at MIT were foreign to traditionally authority-centred, stand-offish English and Scottish professors. His remarkable intellectual and administrative versatility in a variety of professorial and leadership roles were similarly New World, pioneering, frontier characteristics, probably uncommon and unnecessary in Britain. Maclaurin was much more American or New Zealand in his attitudes and behaviour than English or Scots. Both his pragmatic and opportunistic dispositions at MIT to seek financial support indifferently from state and private sources, and his direct personal approaches to politicians at the highest levels of the federal government were specifically New Zealand political behaviours, based on characteristic New Zealand attitudes and assumptions. The thin and patchy evidence points to Maclaurin anticipating many of the attitudes and behaviours which a generation later became, via the New Zealand universities in which he had studied and taught, as well as elsewhere, explicitly recognized as exhibiting a New Zealand national consciousness. The much closer approximation of his pragmatism to American and New Zealand - rather than European - attitudes was symbolized by the action he initiated to change his legal status. Before the War he took out naturalization papers in order to become an American citizen. But he drew back from the final step of completing his naturalization because of what he regarded as shameful American money-making out of the War, and reluctance to join the issue at the side of the British Empire. He never took up the question again. The longevity of his tenure of the role of president of MIT, and his remarkable outpouring of energy in it, point to a most efficient and positive resolution of his earlier career dilemmas.

The major theme of the later years of Maclaurin's career concerns his impact on MIT. Corporate strategists commonly make the assumption

1. McLennan, op.cit, pp.29, 36.

that

The life of every organization.... subunit... human group and individual should be guided by an evolving set of purposes or goals which permit forward movement in a chosen direction and preventing drifting in undesired directions.¹

From this perspective the ultimate paradox of Maclaurin's career is that of a man who for many years had been unable to settle upon a long term career identity and career objectives for himself, yet became an organization leader who exhibited a remarkable grasp of institutional identity, and clear, far-sighted perception of organizational objectives. The paradox can be explicated by spotlighting Maclaurin's motives.

At MIT Maclaurin found a role within academic life which nearly perfectly fitted his motive pattern. On becoming president his strong need for achievement became, via the parallelism between Rogers' values about higher education and his own and the president's role, effectively congruent to the success of the Institute in pursuing its objectives. Pursuit of MIT's long term objectives had to be - as in any organization - attempted in comparatively short term, month by month, year by year steps. As president he received feedback concerning his success in hitting intended objectives. Maclaurin, the achievement-oriented president, became committed to developing the latent and manifest achievement orientation in his organization. In keeping with his need for achievement his attitude toward supporting individual and group responsibility encouraged Institute people to carry out tasks as they saw fit, and to meet their own achievement needs inside the context of broad, agreed objectives. Under his leadership corporation members, alumni and rich businessmen felt that the organization was setting challenging goals for itself, which Maclaurin dramatized by his own behaviour. His need for affiliation affected the way he went about attempting to secure excellent performance from the Institute by interpersonal, group centred means. This resulted in an achievement-centred, team-minded organization climate. Supportiveness and trust underlay the characteristic unified team efforts, encouraging creative contributions. Leadership became a shared function, illustrated by Little's conception of the Congress of Technology, and du Pont chairing the Endowment Fund committee. Maclaurin's interpersonal and team-based leadership had a motivationally intuitive base. In the second decade of the 20th century

1. Kenneth R. Andrews in C. Roland Christensen, et al, Business Policy: Text and Cases, Irwin, 1973.

he led by a set of assumptions and style which did not achieve any currency in management research, education or practice until forty or fifty years later. Maclaurin was remarkably ahead of his time.

This intuitive ability to anticipate a style of behaviour only much later shown to be valuable embraced Maclaurin's performance as a chief executive. As the leader of MIT he behaved in a way which should delight the writers of corporate strategy textbooks fifty years later.¹ It is useful to look first at the financial side of his presidency, the most obvious of his achievements. In 1920, the year he died, MIT had 300 to 400 faculty members and over 3,000 students, double the number of a decade before. When he came in 1909 the total property owned by the Institute was valued at \$4 million. At the time of his death, less than eleven years later, the value had risen to over \$26 million. By means of the endowment campaign the total sum upon which MIT could depend for income was over \$14 million. Maclaurin was, therefore, an entrepreneurial chief executive, in that he brought into his organization new, additional resources which it previously did not possess.

Unlike most general managers Maclaurin explicitly articulated and emphasized long range organizational objectives, rather than day-to-day routine, and sought avenues to pursue these objectives in the short term. His clarity concerning goals was based on a coherent, explicit educational philosophy. By his activities he dramatized and personified organizational purpose, and clarified and defended it against internal and external threat. He planned ahead, but naturally was unable to protect his organization against all the threats in an initially unfavourable environment. When unexpected crises arose he led the organization in rapid adaptation to new tactical approaches to objectives. Maclaurin's recognition of MIT's need for a continuous process of strategic decision and his sense of systemic continuity was symbolized by the motto carved above the fireplace in his Cambridge office: Alia initia e fine: 'Out of each thing brought to conclusion, the beginning of something else'. As president he was always willing 'to act in the face of incomplete information and to run the risk of being proved wrong by subsequent events'.

1. See, for example, C. Roland Christensen et al, op cit., and Robert L. Katz, Cases and Concepts in Corporate Strategy, Prentice-Hall, 1970.

Former president Pritchett encapsulated the received standard opinion of the significance of Maclaurin to MIT when he remarked in 1916: If Rogers was the Moses who led us out of the educational Egypt, Maclaurin is the Joshua who has brought us into the promised land.

At first sight Maclaurin indeed seems more the organizational implementer of Rogers' strategy for MIT than the initiator of it. He kept always referring to Rogers' design for the organization. This was probably an unwitting manoeuvre to emphasize the continuity between his objectives and Rogers', not their identity. On the one hand he articulated Rogers' conceptions with a clarity and modernity that the founder never had: on the other he creatively applied Rogerian notions to an evolving environment the founder could not have foreseen. He extended MIT's goal of service to society to the radically different circumstances of world war, and initiated what became a tradition of Institute involvement in American national purpose, with all its implications for the Institute's future. Under Maclaurin MIT switched allegiances and dependencies from the Massachusetts state government to the national, federal government. To a profound degree the Massachusetts Institute of Technology became the American Institute of Technology. This legacy continues today.

The Technology Plan marked another of president Maclaurin's creative steps in the articulation of MIT's values and mission of providing scientific service to society. It was the first systematic scheme ever worked out by a technical institution for cooperation between a school of pure and applied science and the industries dependent upon this science.¹ The Plan was the first attempt of its kind to do for industry in the United States what the German government had years before done for German industry: to directly associate science with industry, to the mutual benefit of each. The indirect outcome of the Technology Plan is incalculable.

Maclaurin's leadership of MIT was directed towards articulating the first operational definition of the modern scientific university, and its interventionist role vis-a-vis society, whose 'great end is to promote learning by teaching and investigation', and putting that learning to work.

1. 'The Technology Plan', Technology Review, Vol. 22, 1920, p.52.

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